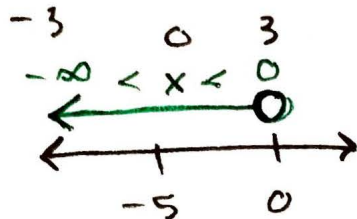


1.7

Inequalities

Day 1 (1)

Interval Notation
 $(-2, 2]$ OR $x \geq -3$
 $[-3, \infty)$ OR $x < 0$
 $(-\infty, 0)$

For inequalities and interval notation,
always read left to right and
smallest value is listed first.

EX 1 Solve

$$\begin{array}{r} -3x + 5 > -7 \\ \underline{-5 \quad -5} \\ -3x > -12 \\ \underline{-3 \quad -3} \end{array}$$

$$x < 4$$

$$(-\infty, 4)$$

If
Multiply or Divide
by a negative,
flip inequality.

1.7 **Ex 3** Finding the break even point Day 1 (2)

Break even when Revenue (\$ bring in) equals Cost (\$ that go out of pocket)

$$\text{Revenue is } R = 4X$$

$$\text{Cost is } C = 2X + 1000$$

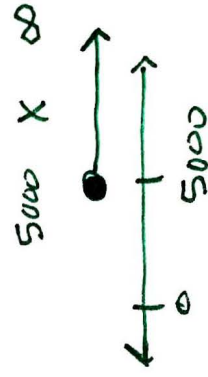
When does R at least equal C ?

$$R \geq C$$

$$4X \geq 2X + 1000$$
$$\begin{array}{r} -2X \\ \hline \end{array}$$

$$\frac{2X}{2} \geq \frac{1000}{2}$$

$$X \geq 500$$



Interval Notation

$$[500, \text{inf})$$

Ex 4 Solve

$$\begin{array}{r} -2 < 5 + 3(x) < 20 \\ -5 \quad -5 \end{array}$$

$$\frac{-7}{3} < \frac{3x}{3} < \frac{15}{3}$$

$$\boxed{-\frac{7}{3} < x < 5}$$

Interval Notation

$$\boxed{\left(-\frac{7}{3}, 5\right)}$$